

## **REMARKS**

Claims 1-5 are pending in the application. Claims 1-5 are rejected. Claims 1 and 2 are currently amended. New claims 6 and 7 are added. Support for the amendments and new claims can be found in the claims as originally filed. No new matter is entered upon entry of these claims or amendments.

### **I. Claim Rejections under 35 U.S.C. §103(a)**

#### *Claims 1, 3 and 5*

Claims 1-5 stand rejected under 35 U.S.C. §103(a) as being allegedly obvious over Japanese Patent Publication abstract, JP 06087657 (“JP 06087657”). Applicants traverse the rejection and request reconsideration thereof. Applicants respectfully submit that this rejection is improper because the Office Action does not set forth the basic requirements of a *prima facie* case of obviousness that is required by MPEP 706.02(j).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants’ disclosure. MPEP § 2143, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438. Applicants submit that the Office Action does not set forth all three of these requirements. Instead, the Examiner rejected the claims of the instant invention using only JP 06087657 and failed to provide any suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, as to why the invention disclosed in JP 06087657 would be modified to produce the instant invention.

The prior art reference, JP 06087657, fails to teach or suggest all the claim limitations. In fact, the Applicants submit that the prior art reference fails to teach *any* of the claim limitations.

The Examiner in the rejection states that the abstract of JP 06087657 teaches:

a composite material and composition comprising inorganic fiber reinforced ceramic composite having nitride based nanocomposite material. The nanocomposite material comprises nitride of aluminum and boron and has nitride particles dispersed in the nanocomposite. This teaching in the abstract would render obvious the invention as claimed in present claims 1-5.

Office Action of April 9, 2008, page 2. That is, the disclosure of JP 06087657 is one solely in which carbide fibers are dispersed in nitride matrices.

Applicants' note, however, that the instant invention is the following:

The present invention provides a new interface composition comprising boron-aluminum-nitride (BAN) and methods for production of the interface composition via coating ceramic fibers with a boron-aluminum nitride (BAN) nanocomposite coating. The BAN coating of the present invention provides oxidation protection for long-fiber reinforced CMCs because it forms refractory aluminum borates upon oxidation....The composite with a BAN interface is expected to resist oxidation for 1000 hours over the temperature range from 400° to 1200° C and possibly higher temperatures. *U.S. Patent Application Publication US2006/0134415 A1*, para. 0024, lines 1-8 and 13-15.

The invention of the JP 06087657 is not the same as that of the instant application; that is, JP 06087657 discloses the use of uncoated carbide fibers in nitride ceramics, and does not disclose, teach, or suggest Applicants' claimed invention of providing a coating for ceramic fibers for use within ceramic matrix composites, said coating comprising boron-aluminum-nitride. JP 06087657 is silent on the need or desirability for such a coating.

Further, to the extent that an interface *might* develop between the nitride matrix and some portion of the carbide fibers in JP 06087657 in which some portion of the interfacial composition *might* be comprised of nitrides of aluminum and boron, and the Applicants are not contending that this is so, this situation would still differ from the instant invention where the ceramic fibers are deliberately coated with a boron-aluminum-nitride coating before the fibers are added to the matrix precursors. To further clarify this distinction, Applicants have amended claims 1 and 2 to reflect that the boron-aluminum-nitride coating is applied to the ceramic fibers before they are incorporated into the matrix. Applicants respectfully submit that the rejections under 35 U.S.C. §103(a) of claims 1 and 3 should be withdrawn.

Regarding claim 5, JP 06087657 fails to disclose a method for coating ceramic carbide fiber with BAN. The Office mischaracterizes the reference because JP 06087657 discloses the following:

The Silicon Carbide Inorganic Fiber Reinforced Ceramics Composite in the present invention can be prepared by sintering after compositing the silicon carbide inorganic fiber and carbide nano-composite or nitride composite with their existing method. Para. 0015, lines 1-6.

Because JP 06087657 fails to disclose, at least, the claim element “extracting metal from the ceramic carbide fiber to form a thin uniform carbon layer on the ceramic carbide fiber”, JP 06087657 cannot teach Applicants’ invention of claim 5. For the aforementioned reasons, Applicants respectfully submit that this rejection under 35 U.S.C. §103(a) of claim 5 should be withdrawn.

*Claims 2 and 4*

Claims 2-4 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Japanese Patent Publication abstract, JP 06087657. Applicants respectfully traverse this ground of rejection and request reconsideration thereof.

MPEP 2143.03 requires that “[t]o establish a prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claim 2 depends from claim 1 and adds further elements thereto. Claim 4 depends from claim 3 and adds further elements thereto. Applicants submit that for at least the reasons stated above with respect to patentability of claims 1, 3 and 5, JP 06087657 does not teach a coating comprising boron-aluminum-nitride *or* a ceramic matrix composite comprising ceramic fibers coated with boron-aluminum nitride. Therefore, the Applicants request the rejections be withdrawn and solicit allowance of claims 2 and 4.

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**PATENT**

New claims 6 and 7

New claims 6 and 7 recite a ceramic fiber comprising a boron-aluminum-nitride coating, and such a ceramic fiber wherein the ceramic fiber being composed of silicon carbide. Applicants respectfully submit that new claims 6 and 7 also are novel and non-obvious in view of the cited prior art. New claims 6 and 7 are fully supported by the full specification and the as-filed claims. In addition, Applicants submit that the scope of claims 6 and 7 are within the scope of the prior art search conducted by the Examiner, so that their inclusion should not automatically give rise to a final rejection.

**CONCLUSION**

Applicants believe the foregoing constitutes a complete response to the Office Action and submit that all pending claims are in condition for allowance. An early Office Action to that effect is, therefore, earnestly solicited. If necessary, the Examiner is invited to telephone Applicant's attorney at the number provided to facilitate prosecution of the application.

Respectfully submitted,

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